

SEPTEMBER 1954

# Soil Conservation

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

# SOIL CONSERVATION•

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ISSUED BY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE  
WASHINGTON, D. C.

## ★ THIS MONTH ★

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WELLINGTON BRINK  
Editor

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, under approval (August 6, 1951) of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

15 CENTS PER COPY

\$1.25 PER YEAR

FOREIGN—\$1.75 PER YEAR

25 percent discount on orders of 100 or more subscriptions  
mailed to a single address

SEPTEMBER 1954

VOL. XX—NO. 2

TREES FOR BOYS.—C. J. Ray, Sr., a supervisor of the Edisto (S. C.) Soil Conservation District, has a unique form of investment for each of his four sons. Shortly before Clifford, Jr., was born 14 years ago, Ray planted 5 acres of pine seedlings for the expected heir. These trees are now large enough to thin.

As the other three boys—Steed, 11; Bradford, 9; and Jonathan, 3—have come along this far-seeing father has done the same for each of them.

Ray's tree planting has not been restricted to the plots for the boys. He tries to plant 3 to 5 thousand seedlings each year in carrying out his district farm plan. Some of these are planted in the less productive fields and others in existing woodland where the stand is thin.

A USEFUL TEACHING AID.—The soil conservation district of New Castle County has again given a year's subscription to SOIL CONSERVATION Magazine to all FFA Chapters in New Castle County, Delaware. The FFA teachers state that the magazine is widely read and they are most grateful to the district supervisors for this gift.



FRONT COVER.—A bit of agricultural Minnesota from the air. The strip cropping and contouring are on the Nelson farm a mile west of La Crescent. We are indebted to William H. Lathrop for the exceptional photograph.



Etter, the Bowens, and the seed drill used to reseed old cultivated land on ranch.

## More Grass—Less Dust

*This rancher—cited for his conservation achievements—  
weathers severe droughts because he pins down his land.*

By VIRGIL S. BECK

"Every acre of cultivated land in Kiowa County will have to be put back to grass if soil blowing is to be stopped," declares L. C. Bowen, who operates a 20-section ranch of 12,800 acres about 22 miles northeast of Eads, Colo.

**K**IOWA County is in Colorado, in the critical area where severe dust storms originated last winter and spring. Of the 1,146,000 acres in the county, 605,000 acres of cultivated land and 62,000 acres of rangeland have been blowing this year.

Since the Dust Bowl period of the thirties a vast amount of acreage, much of which is unsuited for cultivation, has been plowed for wheat production. In 1942, only 4,939 acres were planted to wheat, while 225,000 acres were seeded in 1953. Some of this land has become a serious wind erosion hazard during the last 4 years of drought.

When Bowen moved to Colorado from Perryton, Tex., in 1948, and bought the ranch, he found that one 640-acre section and two 90-acre fields had been in cultivation and were in condition to blow. The 640 acres had been broken



Some of the herd of 400 Herefords on native grass pasture. In 1952 Bowen cut 100 tons of hay from 180 acres of pasture; 90 tons in 1953—notwithstanding drought. He still has hay left from last year's crop.

out in the thirties and abandoned after being planted to corn for 2 years. The field had been blown out down to the hardpan, and more soil blew with each high wind.

"I'm a rancher and these three old fields were a constant menace to my grassland, so I decided to try to get them tied down as soon as possible," Bowen recalls. He became a cooperator of the Cheyenne Soil Conservation District in 1950, and received assistance from Soil Conservation Service technicians in establishing a soil and water conservation program on his ranch.

In 1950, Bowen planted black amber cane on the 640 acres and Sudan grass on the two 90-acre fields in order to get a stubble. He then drilled sand lovegrass in the stubble and got a fair stand. Despite the series of dry years, the grass is improving on the old fields. The 640 acres are not being grazed. The two 90-acre fields are furnishing grazing and seed. Where the sand lovegrass stand has been thin, Bowen has seeded a mixture of switch, side-oats grama, sand lovegrass, bluestem grass and yellow clover, using his own seed drill.

Bowen, who is assisted on the ranch by his son, Buster, has a herd of around 400 Herefords, some of which are purebred. Despite the 4 years of drought, Bowen has not had to reduce his herd.

"The range grasses have been short, but we have managed to get by," he says. He attributes his success to his soil and water conservation program. In addition to revegetating the old cultivated fields, Bowen rotates grazing and has located watering places to get an even distribution of grazing. He saves the pastures

nearest the farmstead for winter grazing.

Bowen has two meadows of about 180 acres along the Big Sandy and Rush Creeks. These provide excellent grazing and are the source of his hay crop. He cut 100 tons of hay in 1952, 90 tons in 1953, and will have some left over this year. Hay averages half a ton per acre.

Bowen feeds cottonseed cake in the winter, and creep feeds his calves. For the last 2 years his calf crop has been better than 90 percent. The calves are marketed at 400 pounds or more.

In recognition of his outstanding conservation work, Bowen was honored by an award in the *Denver Post-KLZ* Soil Conservation Contest in 1952, the citation reading: "In recognition of outstanding accomplishments in the field of soil conservation."

(Continued on page 35)



Grass on native pasture examined by L. C. Bowen, rancher; Fred O. Case, technician; Buster Bowen.

# The Salt Creek Tree Plantings

*Pines and hardwoods behave very differently on good and poor soils, and under stress of various pressures.*

By J. A. GIBBS



Conditions on gullied area after 5 growing seasons.

**I**NCLUDED in the various land use practices in the old Salt Creek Watershed project, Ohio, was the planting of many hundreds of thousands of trees on eroded land. In 1935 alone, about 1,800,000 trees were set out.

At the outset of this ambitious program, the most popular species for planting was the black locust, chiefly because it could be produced and made available in large numbers in a relatively short time. The percentage of pine, however, was increased as rapidly as the stock could be produced, for it became apparent very early that pine would survive and thrive on a much wider range of soil and site conditions than black locust and various other hardwoods.

Most of the sites were eroded fields. Their soils came from limestone and shale parent

materials, with the latter predominating. One of the most typical soils was Muskingum silt loam. Black locust and other hardwoods, including black walnut, tulip poplar, and white ash, were planted on better soils such as Belmont, Brooks, and West Moreland. Some planting was done on spoil banks, more or less for observational purposes.

Generally speaking, no special methods of site preparation were applied. Scalping and planting with a grub hoe, using the center or side-hole method, were more or less standard. There was no planting by machine.

Most of the hardwood stock consisted of 1-year seedlings; pines were transplants. Hardwoods, particularly black walnut, were grown from stratified seed. Red, white, and Scotch pine were propagated in both pure and mixed plantings. A few cuttings of cottonwood and

Note.—The author, now retired, was formerly forester with the Soil Conservation Service.



Gullied area set to locust trees and fenced out of pasture in early days of demonstration.

willow were used back of check dams.

Most of the planting was in the spring. Severe heaving of the trees out of the ground sometimes followed fall planting, particularly when black locust was planted on bare soil.

Standard spacing was 6 x 6 feet in fields; in gullies, as close as 3 feet apart.

Periodic observations have been made of typical plantings, and in the summer of 1952 a detailed study was made of selected plantings representing the more commonly encountered conditions. This latest study includes the measurement of growth of the various species planted. A summary of this information follows:

**1. Survival.**—In general, the pines show very good survival even on the more severely eroded and dry sites. Of them all, white pine makes the poorest showing. This results in poor density in most of the planting of this species. More or less regardless of varying site conditions, there are many small dead trees scattered about. The survival of black locust and hardwoods has been more erratic. On many of the poorer hardwood sites the mortality has been very heavy. However, some good stands, particularly of black locust, tulip poplar, black walnut, and white ash, have resulted on the better sites. It has been a rather common observation over the years that on severely eroded sites where pine and hardwoods were planted side by side the pines have done well in sharp contrast to the failure of the hardwoods. It has also been observed in several places that black locust did well during the first few years, but rather suddenly started to die in large numbers. The black locust borer undoubtedly was partly to blame. A good example of this was on some of

the spoil banks north of Zanesville where black locust flourished the first 6 to 8 years and then started to die and break over in large numbers. On these same spoil banks there is an interesting comparison of the success of pine and hardwoods. On two adjacent plots with comparable conditions, planted cottonwood and willow failed almost completely, while Scotch, red and Austrian pine survived and grew very well.



Same area two and a half years later.

**2. Rate of growth.**—Below are listed measurements of diameter and height growth of all species planted. Volume growth is also shown for some plantings.

Average Growth of Typical Plantings, per Year, by Species

Species	Diameter (Inches)	Height (Feet)	Volume per Acre Cords	Posts
Red pine	.25 (8)	1.4 (3)	.61 (2)	
Scotch pine	.27 (3)	1.9 (3)	.96 (2)	
White pine	.23 (3)	1.8 (3)	.47 (1)	
Tulip poplar	.24 (2)	1.9 (2)	.61 (1)	
White ash	.26 (1)	2.0 (1)		
Black walnut	.20 (1)	1.5 (1)		
Black locust	.24 (2)			50 (2)

Note.—These plantings were 18 years old when measured, except for one white pine which was 17 years old. Cords go to a 3" top diameter. Figures in parenthesis indicate number of plantings measured.

The table discloses that Scotch pine has excelled in rate of diameter growth and is equalled in height growth only by white ash and tulip poplar. In observing current height growth it was commonly noted that white pine has accelerated its annual rate of gain more than any of the other species during recent years. In studying these figures, it should be borne in mind that the pine plantings represented are more or less typical of many similar plantings in the watershed that were planted at the same time, while the hardwood plantings are more

or less the exceptions. In other words the pine plantings were generally very successful, while only a few of the hardwoods that were put on the better sites were successful.

Some interesting comparisons of the growth of planted hardwoods in mixtures have been found. For instance, on one farm tulip poplar and white ash were planted in alternate rows, spaced 6 x 6 feet, on what proved to be a moderately good site for hardwoods. Periodic observations disclosed that the tulip poplar gradually overtopped the white ash. On a plot of one-tenth acre there are 48 live tulip poplars averaging 40 feet tall and 5 inches in diameter, but only 36 white ash, the latter averaging only 1.5 inches in diameter, most of which are overtopped and suppressed by the tulip poplar. The maximum diameter of tulip poplar was 9.4 inches; that of white ash, 3.9 inches.

Periodic observations of a mixed planting of white pine and tulip poplar discloses some interesting trends in the growth of the two species as reflected by the varying site conditions. In a ravine the tulip poplar shows pretty



As pines matured a nice ground cover was established beneath them.

and most of the white pine within the plantation have been overtopped. The site in this case was badly eroded Muskingum loam.

As indicated previously, the result of the black locust planting has been most variable. In so many areas the trees did well for a while and then suddenly suffered deterioration and death. On the other hand, in a few plantings some excellent results have been seen—fine, tall, clean trees. In one planting, for example, the trees averaged about 5 inches in diameter and some would yield as many as six posts.

The spoil bank plantings mentioned above have been of special interest. Of all its contemporary plantings—red, scotch, and Austrian pine, black locust, cottonwood, willow, and black walnut—the black locust got off to the



Immediately after red pine seedlings were planted on badly eroded hillside. The soil is Muskingum.

good vigor from the start, while on the ridges where erosion was worse, they show very poor growth over several years and still reflect the poor site conditions. The white pine on the other hand, has done uniformly well all over the area. Measurements, however, reveal average diameter and height of the two species as about the same today.

In one four-way mixture of pine—Scotch, red, white and Austrian—the Scotch has dominated from the start. In fact the Scotch pine has been so aggressive that all of the red pine



After 12 growing seasons, the pines were 20 feet tall.

most vigorous start. In fact, in a very few years it had completely covered the banks, while the pines were gradually taking hold. Today the pines, in turn, have established very good cover on the banks and are found in full stands. The cottonwood and willow failed completely, and the walnut, which was planted in the choicer spots, has done but moderately well.

Both stratified nuts and 1-year old seedlings were used in planting black walnut. The nuts have produced the better results. Some very fine young stands of black walnut have been established by planting stratified nuts early in the spring, which shortens time during which the nuts are likely to be preyed upon by rodents.

3. *Natural invasion*.—Invasion of tree plantings in the Salt Creek watershed by quite a variety of woody species began to occur surprisingly early, considering the poor and eroded sites. As early as 1939 the records list red and white oak seedlings, black cherry, sassafras, sycamore, elm, red maple, hickory, dogwood, and tulip poplar. More recent records list, in addition to these, black walnut, black gum, honey locust, sumac, white ash, ailanthus, and redbud. One black locust planting studied in 1952 has almost a complete understory of American elm, ailanthus, and aspen.

4. *Accumulation of ground cover*.—The pines have developed a much heavier ground cover than the hardwoods. They have also developed the best young timber stands, due to better, more uniform survival. Some quite remarkable examples of this have been observed on some of the poorest, driest sites. For example, on a narrow break of shaley, washed-away land near Zanesville, red pine seedlings were planted in April 1935. Surprisingly good survival resulted, but quite slow growth at first. Within 8 years however, this bare site was completely covered with a fine stand of pine trees and a ground layer of pine needle litter.

5. *Damage by fire, insects, and grazing*.—During the periodic visits to the Salt Creek watershed damage to plantings by grazing frequently was observed by me. As fences deteriorated, both sheep and cattle gained entrance and caused very noticeable damage to trees and to soil. Damage by fire was not common. About the only insect damage noted was among the black locusts where the borer appeared within

a few years after planting and did more and more damage as the years passed.

#### Summary

The performance of these Salt Creek watershed plantings offers experience useful in connection with future tree plantings.

1. Pines have shown much more tolerance of poor site conditions than hardwoods. On eroded soils, pines should be used for reforestation and erosion control—preferably red and white pine. Even though Scotch pine has grown faster than red and white thus far on this watershed, it does not produce nearly so good quality forest products as the red and white. However, it does produce very desirable Christmas greens. Therefore, it could be mixed with the others to be taken out in 6 to 7 years for this use.

2. Black locust and other hardwoods belong only on sites with little or no erosion.

3. On spoil banks in the watershed, red, Scotch, and Austrian pines can apparently be planted with a good chance of success over the years. Black locust and other hardwoods have not done well on these Salt Creek plantings.

4. On small areas of good, well-drained soil that cannot be efficiently used for crop or pasture the planting of such species as tulip, white ash, and black walnut (preferably in pure blocks) is suggested. On these good sites very rapid growth of tulip poplar, in particular, can be expected.

5. Mixtures of white and red pine are proposed. Mixtures of pines and hardwoods can apparently be made with a reasonable degree of success, provided the soil is not too poor for the hardwoods. A preferable procedure would be to plant the hardwoods on the better spots, such as along ravine bottoms.

6. In planting black walnut, use stratified seed. Plant several nuts per spot in early spring.

7. To avoid danger of winter heaving, plant trees during early spring. This is particularly advisable where bare sites are being planted.

8. To protect plantings from grazing damage, the rule should be to exclude livestock at all times. Planting of black locust on favorable sites will help prevent excessive damage by the black locust borer. Where planted areas have high fire hazards along boundaries it may be necessary to establish and maintain firebreaks.

# Conservation In Yet-Young Land



Native forest range

*Modern farm planning and management make abandoned homesteads productive and profitable.*

By  
**FLOYD**  
W.  
**HOUGLAND**



Joe Somday.

As compared with other parts of the country the area's period of exploitation was short and not particularly severe. Many of the early settlers believed a timber shortage was imminent and took up homesteads in an effort to profit from it. Logging methods were such that many areas accessible today for logging were not at that time. The Colville National Forest which covers a large part of the Curlew Soil Conservation District was established in 1907. Today, conservation thinking is prevalent. Comparatively speaking, we didn't have a chance to "wear out" any farms. Even so, problems arose and mistakes were made. Wild horses by the hundreds depleted large ranges on private and forest lands alike. Many a homesteader put his plow to land better suited to grass and timber. At best, the homestead size operation furnished only a meager living. One by one, these units were abandoned and in their wake remained many acres of non-producing land—land which once provided livestock and forest products and watershed protection.

Here, where the raising of beef is the main pursuit, it was realized that the abandoned

Note.—The author is work unit conservationist, Soil Conservation Service, Republic, Wash.

homestead would have to be made to produce. Most operating units were stocked to capacity; the balance was fine between ground needed for hay and that required for range. Any practice requiring the withholding of a field, even temporarily, would reduce the capacity of the unit for the time.

The story of how A. H. "Dutch" Bremner, the 1953 Washington State Cattleman of the Year, overcame these problems is representative of the inspiring experiences of farmers who are working through the Curlew Soil Conservation District.

Bremner's ranch contains several former homesteads which were weighted down with all the customary problems. The district was asked to assist in developing an overall plan for the ranch. It took a little while for the technicians to cover the 6,000 acres. On the maps were indicated the areas to be seeded, the placement of drift fences, the water to be developed, the land to be cleared, the location of irrigation systems, the tentative grazing dates, and many other items. All of the measures to be taken were listed on a couple of sheets of paper. Dutch then set down tentative dates for completion of each part of the job.

The program is well under way. The first achievement was a threefold increase of hay production on existing cropland. This was realized through irrigation, drainage, fertilization, the use of improved varieties, and better seedbeds. Clearing brought in additional land for hay. This permitted the seeding to pasture of fields no longer needed for hay. Drift fences, water developments, brush eradication, and a close check on rotation and deferred grazing, along with the range-seeding program, are keeping the increase in range apace with that in hay.

Tony Evanko, Forest Service range conservationist, reports how this farmer selected grass species for range seeding:

"Adaptation studies of forage species conducted by the Northern Rocky Mountain Forest and Range Experiment Station of the U. S. Forest Service, in cooperation with R. H. Martin, local rancher, provided the basic information—planting season and performance of adaptable species. Four outstanding species were selected



Crested wheatgrass and intermediate wheatgrass planted in spring of 1952 on marginal cropland formerly producing one-half ton of rye hay per acre. (Photo: U. S. Forest Service, June 1953.)

and spring-planted in well-prepared seedbeds in 6-acre pastures. These plantings, in addition to revegetating such lands, are to be used in controlled grazing trials to determine the effect of the reseeded grasses on early spring gains of cows and calves and the response of these grasses to grazing treatment. A nearby unseeded area is to be used as a comparison. Although the plantings were very successful, two growing seasons have been allowed to permit the plants to become well established before beginning the grazing trials. Herbage production of the reseeded stands has not been determined, but it is readily apparent that it will be many times greater than on the adjacent check area. Although not established for seed pro-



Comparable adjacent unseeded area supporting a sparse cover of inferior annual weed species of little or no grazing value. Camera case 8 inches high. (Photo: U. S. Forest Service, June 1953.)

duction, 535 pounds of grass seed (currently valued at \$411) were harvested from 3 of the pastures—an average return of about \$25 per acre from land considered essentially non-productive. The seed will be used to plant an additional acreage. Under his rehabilitation program, 50 acres of former cropland are to be reseeded annually.

Simultaneously with land improvement, Dutch Bremner is determined to raise better cattle and more cattle. Assisted by the Extension Service, he has procured better bulls, started selective breeding, and rearranged yards and corrals to handle the stock better. His selection as 1953 Washington State Cattleman of the Year is well deserved.

## MORE GRASS—LESS DUST

(Continued from page 28)

Despite his best conservation efforts, about 1,500 acres of Bowen's native grassland have been damaged this year by soil blown from nearby cultivated fields.

"About 30 percent of the wheat farms in this area are owned by non-residents," says Bowen. "When blowing starts, they are not here to do anything to stop it, so we have to eat their dirt. Furthermore some of the resident farmers move out and leave their problem with us when their land starts blowing. If this soil blowing isn't stopped, a lot of our good grassland is going to be ruined. That's why I say it all should be put back to grass, for this is a ranching country."

For protection against the blowing dust, Bowen has established a tree windbreak around his home, and this spring he planted trees around his barnyard.

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**TEACHER'S INSTITUTE FEATURES CONSERVATION.**—A conservation workshop, in which a number of South Dakota soil conservationists and specialists took part, was a feature of the annual Campbell County Teacher's Institute held at Herreid, S. Dak., last fall. Approximately 45 teachers and the members of the Herreid high school senior class attended.

The program, first of its kind ever held in South Dakota, was based on the new textbook, "Conservation of South Dakota's Natural Resources" which covers five main categories of conservation—soil, water, plants, wildlife and minerals. The textbook was developed at a Northern State Teachers College workshop held at Aberdeen, S. Dak., and is currently being made available to every school in the State.

A special feature of the program was a talk by Dr. Warren C. Lovinger, president of Northern State Teachers college, on "Natural Resources and Human Resources."

A. Forrest Sorensen, area soil conservationist of Mobridge, presented a general review of workshop objectives. This was followed by discussion on soil, water and plant conservation by John T. Dunlavy, soil scientist, Arthur R. Fenn, area engineer, and Leslie Albee, range specialist. Reuel Janson, state game biologist spoke on wildlife conservation and Elroy Lume, soils survey supervisor, discussed minerals. A summary by State Conservationist Ross D. Davies of Huron concluded the program.

Calvin Ochsner, Campbell County soil conservation district chairman, presided at the morning session, and Ervin Grenz, vice chairman, at the afternoon session. Michael Madden, extension agent of Campbell County, was master of ceremonies at the noon luncheon.

**C**ONSERVATION of human and natural resources is an opportunity and a challenge. Many schools recognize this opportunity and are doing something about it. A school in South Carolina has set an example in this respect.

The teachers at Newberry Junior High School have been relating the conservation of soil, water, wildlife, minerals, and forest resources to subjects taught during recent years. They participated in many classroom activities during the 1953-54 school year. They brought their year's programs of emphasis in this field to a close on May 28 by taking all the children and teachers in Newberry Junior High School on a tour to see soil and water conservation on some farms near Newberry. There were 263 children and 6 teachers on this tour.

The tour was arranged at the request of R. E. Beck, principal. The group left the school at 9:15 in the morning on the last day of school and returned at 11:00. Even though it was the last day of school the children showed much interest, and their conduct and attention were exceptionally good.

They visited the farm of T. O. Stewart, where a whole farm soil and water conservation plan, prepared by him with the assistance of Soil Conservation Service technicians, has been applied.

They also visited Rookwoods, the summer home of Mr. and Mrs. Don Rook of Newberry.

Note.—The author is area conservationist, Soil Conservation Service, Chester, S. C.



Newberry teachers on tour: Standing—Mrs. A. H. Counts, a newspaper correspondent; Mrs. Naomi Epting, Mrs. W. L. Welborn, Mrs. Clifton Graham, and Mrs. Tom P. Johnson; kneeling—E. E. Epting, SCS technician, and W. A. Ridgeway, assistant county agent.



High point in year's study of soil and water conservation: It to T. O. of Newberry Junior School

## A Whole School Visit

*Natural resources become important teachers in this junior high school, made a part of the regular curriculum.*

By J. MARLE



n: it to T. O. Stewart Farm by 263 children and 6 teachers  
Julligh School.

## Visits A Farm

important to students and  
high school, and conservation is  
a regular curriculum.

MARLE

Mr. and Mrs. Rook have conserved nature in a remarkable way in the form of virgin forests, virgin soil, rock formations, native vegetation, and other forms of natural wildlife. The visit to Rookwoods was so the children could capture in their experiences an appreciation of vital resources in their natural protected state. There is a beautiful farm pond at each of the places visited. There are also bicolor plantings for wildlife.

The teachers in this school have done an exceptionally fine job of teaching conservation of natural resources in the classrooms and on the school grounds.

On May 13, Dr. Wilhelmina Hill, United States Office of Education, George W. Hopkins and Minnie Lee Rowland of the State Department of Education, visited Newberry Junior High School to observe their methods of relating resource conservation to subjects taught.

Teachers in all of Newberry County are in dead earnest about relating natural resource conservation to their curriculum. Recently, D. A. Bedenbaugh, of Prosperity, S. C., a supervisor of the Newberry Soil Conservation District, asked P. K. Harmon, director of the Newberry County Public Schools, to serve as chairman of a committee to plan ways to relate the conservation of natural resources to subjects taught. Harmon appointed other members to this committee as follows: S. P. Harris, teacher of agriculture, Bush River High School; R. C. Neal, member of the County Board of Education; J. V. Kneece, superintendent of the Newberry High School; H. M. Bedenbaugh, teacher of agriculture, Pomaria and Little Mountain schools; J. G. Long, superintendent of Silverstreet High School; R. C. Lake, superintendent of Whitmire School; Mrs. Ray Nobles, science teacher, Newberry High School; and Mrs. Naomi Epting, sixth grade geography teacher, Newberry Junior High School.

This committee met on May 11 in the Newberry County Office Building and also visited Mrs. Epting's classroom to see an exhibit of the conservation work done by her children during the year.

Harmon asked certain teachers to prepare recommendations as follows: J. V. Kneece for high school level; Mrs. Naomi Epting for ele-

(Continued on page 45)



The happiness of achievement shows on faces of Ronnie Davis, Dennis Durham, Brenda Hallum, Norma Lanelle, Karen Beardsley, and Gordon Page.

## Parents, Teachers and District Join Forces

By ELSTON S. LEONARD

THE Pulaski County (Ark.) Special School District, the Lonoke-Pulaski Soil Conservation District, and the Parent-Teacher Asso-



"Gifts from the forest" is theme for this display of classroom material correlated with English, science, art, and conservation.



John F. France, principal of Roland school, with fifth and sixth grade boys who are learning the importance of soil conservation to their community.

ciation have worked closely together the past 5 years to speed up the job of conserving the soil.

The supervisors, who govern the soil conser-

Note.—The author is work unit conservationist, Pulaski County, Ark.

vation district very much as a school board governs a school district, provide cash awards and a considerable amount of soil conservation literature and also encourage visits from soil conservation technicians, as their part of the project.

School officials and teachers do research, organize teaching material, and correlate soil and water conservation with the basic subjects of the classroom.



Tabletop model on wildlife, constructed after classroom study. It includes a stockpond with water, live turtle and minnows, many clay-modeled people, animals, trees, and grass. Labels added interest. Pupils: Mike Kirk, Connie Fleming, Judy Holland, Jackie Skinner, and Felix Stacy.

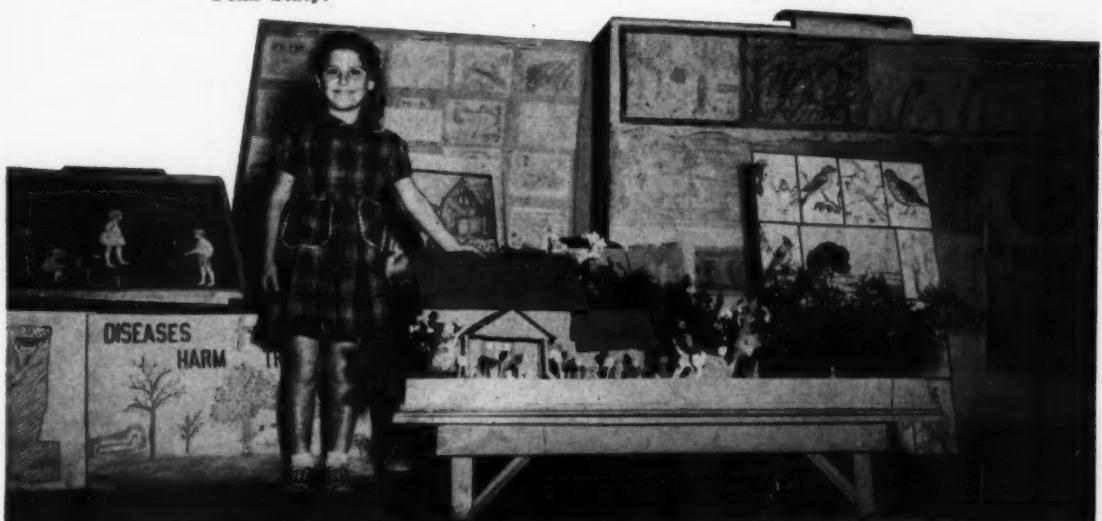


Salt and flour maps of soils in Arkansas, constructed after classroom work by sixth graders.

The Parent-Teacher Association assists by conducting conservation meetings, by providing funds to purchase teaching material, by judging exhibits, and by emphasizing the need for conservation instruction in their schools.

Soil Conservation Service employees working with the district assist by providing technical information for teaching units. They also appear before classes to talk on soil and water conservation, assist with field tours, help judge

(Continued on page 45)



Classroom study results in freehand drawings, resource maps and tabletop models, as well as future conservationists.



Inspecting main drain are SCS Engineer Bob Miller, and District Directors W. E. Rayn and Charles McGimsey.

yet 2 years old—has finished the job it set out to do. It has completed one of the country's biggest voluntary drainage undertakings.

Resourceful district directors raised most of the \$70,000 needed for draining the 16,000-acre wet farming section.

Everyone pitched in to get the job done. Helping hands came from the California State Highway Department, the City of Dixon, Reclamation District 2068, the Solano County engineer, treasurer and council, U. S. Navy, the Dixon bank, Production and Marketing Administration, Soil Conservation Service, Pacific Telephone and Telegraph Company, Dixon Soil Conservation District, and some 61 farmer-owners of wet acreage. Dixon district directors successfully molded these friendly groups into a working team.

Crop yields on an average should double now that water-laden lands can be properly drained and irrigated.

As far back as the 1850's when early home-steaders and Spanish Land Grant farmers settled in Dixon, landowners wrestled with winter flooding from a network of creeks and streams, plus runoff from the English hills. Sheep grazers used to wince when they saw that potential supply of irrigation water. What a boost summer water would have given their early-day dryland pastures!

## They All Worked Together

*A vast area of wet lands is made productive when many groups give of their thought, energy, time, and money.*

By HERB BODDY

JUST about everybody along Main Street in the up-and-coming town of Dixon in Solano County, Calif., can tell you a whopping soil conservation story. It is a true one about community teamwork, wet acres and democracy in action.

What you hear is this:

The Dixon Soil Conservation District—not

But when farmers began seeding improved pastures, and irrigating, in 1935 they ran into more water troubles. On leveling for border checks, old natural drainageways clogged up and water lay on lands well into spring. Even more vexing to them was the sight of their water spilling onto neighboring farms. Their tail water also raised the dickens with roads.

Dixon Valley farmers simply had more water than they could handle. More water problems lay ahead. These hustling farmers were not borrowing trouble, but they could see a lot more winter groundwater coming when the big Montecello water storage dam in the English hills northwest of Dixon was ready for irrigators.

More and more dryland farmers have been swinging over to irrigation, with the amount of new irrigated land running about 2,000 acres a year in Solano County.

There was also the prospect of a serious alkali problem should the water table keep rising. What to do with all that extra water!

"We never had it so bad as far as water goes," say Eb Rayn and Charlie McGimsey, Dixon farmers. "Our lands were getting pretty well soaked in winter, bogging down winter and spring seeding and tillage work. Things were getting worse rather than better. What the Dixon area needed was a good drainage system. We feel our farmers got a lucky break when



Miller, McGimsey, Rayn, and contractor check over one of the plans for Dixon drain.  
Condition of gullied area after 5 growing seasons.

they hit upon the idea of getting drainage work done through a soil conservation district."

How Dixon area farmers set up their district is fast becoming a legend in the lower Sacramento Valley.

To marshal some 60 farmers and various agencies and groups to work for a common goal, called for some super-selling on the part of Charlie McGimsey, W. E. Rayn, Water Anderson, Arnold Collyer, Vernon Schmisner, Bill Tutt, John Dawson, Godfrey Priddy, Jesse Jones, and Bill Campbell, to name a few.

They made trips up and down the area contacting absentee landowners, visiting farmers in their homes, holding frequent meetings and discussions with Solano County and Dixon city officials. There were talks too with PMA, Soil Conservation Service, and other agencies participating in the preliminary planning. The "minutemen" campaigned for their drainage idea night and day.

About the time the 16,000-acre Dixon Soil Conservation District was organized in 1952, the enterprising farm leaders had the drainage program in the bag. Some \$35,000 in cash was collected from landowners and pledges came in from cooperating agencies.

On hand, too, were voluntary easements and rights-of-way needed for ditching across farms. The district farmers also were ready with a practical plan for getting rid of surplus water—a plan arrived at with the help of SCS technicians Bob Miller and Ralph Bishop.

By September 1953, the district directors had the drainage work well under way. It was no small job to lay out 5 miles of main channel, nearly 24 miles of open-type lateral ditches, and to clean and shape 4 miles of old drainageways. It was a time for rejoicing when dragline rigs moved the last of some 185,000 cubic yards of earth in December. Sixty-three working days were needed to do what had been overdue a hundred years.

Dixon farmers are reaping real returns. Crop yields are soaring. Farmers are able to work their fields much earlier in the spring. They like the summer drainage, and the chance to do a better job of winter grain seeding.

Here are a few examples of the teamwork that made the Dixon Drainage Project possible:

**U. S. Navy.**—Used own rig to construct ditches on Navy property.



McGimsey and Miller take a look at the map.

**American Telephone and Telegraph Company.**—Paid ditching costs for 640 acres of its land.

**Solano County.**—Voted \$17,000 for culverts.

**Reclamation District No. 2068.**—Permitted the soil conservation district to tie into several of its ditches. In turn the soil conservation district allowed use of one of their new channels. Districts jointly agreed to maintain drainage outlet to Hass slough.

**City of Dixon.**—If drainage system is extended to north, city will spend \$1,200 for connecting construction.

**Solano County Treasurer and Council.**—Financial and legal advice.

**Production and Marketing Administration.**—ACP money for farm feeder ditches, plus one man's salary on survey crew. ACP money will reduce actual drainage cost for farmers by a third, or down to \$2.50 per acre.

**First National Bank of Dixon.**—The banker made the job possible. He loaned money to various farmers for 2 years at 5 percent on their two-thirds payment. Some farmers didn't have the ready cash to pay for the ditching.

**Soil Conservation Service.**—Gave farmers technical and engineering assistance in laying out drainage system and planning irrigation improvements.

W. E. Rayn, one of those farmers who spearheaded the drainage movement, puts things this way, "Our farmers have said a good many nice things about the drainage work. But what seems

to strike them most favorably is that such an undertaking encourages independent thinking and action. There was nothing compulsory about our drainage project. Farmers could join in voluntarily, or they could stay out, as they pleased."

You can't blame those Dixon farmers if they appear a little puffed up over their accomplishment. Aren't their lands "high and dry," and isn't the drainage bill paid in full?

District-wide projects such as the Dixon drain serve as a testing-ground and showplace for wet land owners in adjacent areas. When tough drainage problems are worked out successfully, as in the Dixon Valley, it starts other folks to thinking and planning.

And that's what has happened to 75 farmers in two other areas nearby totaling 18,400 acres. They liked the way Dixon lands were drained, and have asked to be included in the district so surveys and engineering work could get under way. Some 30 miles of ditches and drains will be needed, say the technicians, to rid wet areas of runoff and overflow.

Associate directors, who are heading up the drainage program with a helping-hand from the Dixon Soil Conservation District governing board, hope to see the drainage job completed before fall rains set in. They expect fund-raising and community programming to be simpler and to click faster with the well-run Dixon drain as an example.

## Basic To Every School Course

*Conservation education in Brown County, S. Dak., reaches every rural pupil. It is worked into his regular studies, and supported through contests and field trips.*

By RAY R. HUXTABLE

URAL school children, teachers, and parents are all enthusiastic about conservation education in Brown County, S. Dak. Children like it because it is something they can grasp easily and see in their everyday life. Teachers find that conservation can be injected and correlated with a number of different phases of schoolwork. Parents are anxious to have their children know more about the things from which families derive their living. And most farmers would like to see their sons and daughters develop an interest in farming so they will stay on the farm when they are grown.

Conservation education in this county has received its sponsorship and incentive from the supervisors of the South Brown and Brown-Marshall Soil Conservation Districts, which cover the entire county. In addition to such support, the program has also received a great

deal of aid from other sources, such as the county superintendent of schools, the Extension Service, the Soil Conservation Service, and the local newspapers. Prior to 1953 the two districts sponsored various projects involving essay, scrapbook, jingle and poster contests. The districts own slide strips and have provided a projector so that conservation films can be shown in the rural schools.

Soil Conservation Service technicians and the county agent have played an important part in bringing conservation directly to the schools. In 1952, all the county's rural school children were taken on tours to study soils and conservation practices. This past winter over half of the schools were visited, and presented soil demonstrations. One or more district supervisors were usually present.

During the past school year, district supervisors promoted a conservation achievement program, copied after the Goodyear program

Note.—The author is work unit conservationist, South Brown Soil Conservation District, Aberdeen, S. Dak.



The author is pictured with winning teachers in 1954 Conservation Achievement Program. Teachers: Mrs. Ferdina Beck, Parkway School; Mrs. Donna Hubert, Houghton School; Mrs. Alma Rogers, Trail School; Mrs. Ray Johnson, Gage School; Shirley Widstrom, Bell School; Ruth Johnson, county superintendent of schools, and Lois Rogers, Prairie View School. Mrs. Mary Elliott, All Star School, was not present for picture. (Photo: Aberdeen, S. Dak., *American News*.)

for soil conservation district supervisors. This program gave the teachers a great deal of latitude in selecting the subjects that could be best accomplished in each school. Points were assigned for each activity connected with conservation. Credit was given for the use of films, slides and other visual aids, and also for collecting a suitable list of library references helpful in teaching conservation. Particular emphasis was given to activities carried out by pupils, such as making field tours to conservation farms to see conservation practices applied. During the year the children made scrapbooks, wrote essays and made posters. They also made collections of leaves, soils, weeds, and grasses. Extra credit was given for pupils reading their essays and putting on simple soil demonstrations before community meetings of adults.

Mrs. Alma Rogers, teacher of the Trail School, west of Aberdeen, and winner in the Achievement program, says, "My pupils and I

found that conservation applies to many subjects. The parents of my pupils tell me that their children are taking a greater interest in the activities around the farm."

Milton Tostlebe, professor at Northern State Teachers College, visited six of the schools that won plaques, certificates of achievement, or cash prizes. He was particularly pleased to see how the teachers had worked the fundamentals of conservation into so many subjects, such as, arithmetic, spelling, geography, social studies, hygiene, and history.

Additional incentive came to the program this year when teachers began using the book, "Conservation of South Dakota's Natural Resources," which has been adopted as a regular part of the curriculum in South Dakota elementary schools. This book was developed in 1952 at a conservation workshop held at Northern State Teachers College. It was sponsored by the State Association of Soil Conservation Districts. The book contains the basic prin-

ciples for teaching a constructive course in conservation here in the midwest.

The South Brown and Brown-Marshall districts intend to develop their Conservation Achievement Program as a continuing project. Participation has been gratifying, and it is their belief that the program will grow each year as teachers become more familiar with the subject. A good number of the teachers in Brown County have taken a course in conservation at Northern State Teachers College. The two districts awarded scholarships to four teachers in 1953 which enabled them to attend this course.

Well started now, conservation education in Brown County has prospects of developing into a well coordinated drive which will afford the youth of Brown County a good basis for meeting the challenge of an ever changing and forward moving agriculture.

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#### JOIN FORCES

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exhibits, and arrange for conservation speakers at school meetings.

A few posters, mostly about forestry and wildlife, were displayed in the county courthouse the first year of the awards. The material resulting from teaching the subject has grown in volume, in quality of work and in scope of subject matter, until the displays this year became too voluminous for the courthouse and had to be shown at the individual schools. Judging in the senior high, junior high and elementary division of the 18 white schools and 21 colored



Second graders, proud of their drawings and booklets.

schools took 8 days. More than 300 teachers and 9,950 pupils participated in teaching and learning about a complete soil and water conservation program.

The objectives of this program in the elementary grades are to create an appreciation for the soil and to help pupils realize that we are dependent on its proper use. In the junior high schools more details are learned about the effects of erosion on man and his institutions and what can be done to control erosion.

In the senior high schools more emphasis is given to the application of erosion-control measures on the land and to developing some skills in erosion-control work.

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#### SCHOOL VISITS FARM

(Continued from page 37)

mentary school; S. P. Harris for vocational agriculture; and Mrs. Ray Nobles for science classes.

During the year many films were shown to thousands of children and teachers, essays were written, posters were made, soil types and rocks were collected, and many other activities were engaged in to learn more about conservation of natural resources.

This school is but one example of the many schools that are doing more each year to relate conservation of resources to subjects taught.

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**CONCERTED DRIVE ON LITTER.**—In May representatives of 35 national organizations attended the first advisory council meeting of the newly organized Keep America Beautiful, Inc., in New York City. The total bill for the nation's trash collections and other cost of litter is believed to run between 40 and 50 million dollars a year.

Keep America Beautiful, Inc., was formally established on December 10, 1953. The corporation will be administered by a Board of Directors composed of nationally known leaders, recognized for their general contributions toward improvement of public welfare, and prominent throughout a broad range of American industry. All parts of the United States will be represented on this Board. The Advisory Council includes representatives of national public service organizations such as the National Wildlife Federation, whose objectives are consistent with the K.A.B. program. K.A.B. has its headquarters at 100 Park Avenue, New York City. Financial support has been provided by some of the nation's leading industries and trade organizations.

# Camporee

THREE 1-gallon jugs intrigued visitors to a Boy Scout Camporee last spring at Lancaster, S. C.

The Scouts explained to several hundred interested persons the significance of the jugs and other exhibits on soil, water, forests, and wildlife. John E. Nisbet, Soil Conservation Service technician, served as adviser to the Scouts in making the displays effective.

One of the jugs contained water from a very muddy stream and another water from a clear stream.

The muddy sample told the story of excessive soil erosion in a watershed where lack of ground cover such as pasture or forest permitted the soil to be washed into the stream. The other sample depicted a watershed protected from falling raindrops by vegetation, which kept the runoff water clear.

In still a third jug the soil from the muddy stream had settled, showing the extent to which sediment was being transported.

The Scouts made it plain that ground cover, such as pasture, forest, hay and forage crops, protects the soil from falling raindrops.



These Scouts know that whether water in a stream is muddy or clear depends a good deal on the ground cover in the watershed: Billy Chapman, Walter Steele, and John Broadwater.



This cage of quail caught the eyes of visitors. Richard Steele was quick to explain that soil conservation benefits wildlife.

Visitors were also encouraged to take a long look at a soil profile—a 6-foot cross section of soil, removed and mounted in its natural position. Scouts noted that the thin, dark upper layer was topsoil, from which comes most of our food. Originally about 6 inches deep, it has been completely eroded away on millions of acres of land.

Below the topsoil, the subsoil graded into bedrock—the parent material of all soil. It takes nature a long, long time, the Scouts explained, to make an inch of topsoil from bedrock.

The moral, the Scouts pointed out, is that it is extremely important to save this thin layer of topsoil by following sound soil conservation methods.

To indicate the importance of trees in a soil conservation program, the Scouts observed that trees in a well-managed forest lay a continually increasing layer of leaf mold over the ground surface—a layer which absorbs water like a sponge. Trees also protect the soil, they said, against the pelting action of raindrops, as anyone who has sought shelter under a tree during a rainstorm knows.

How trees grow was seen in a cross section of a pine sapling, which had attained a diameter of 5 inches and a height of 21 feet in 4 years. The age of the sapling was indicated by the rings. Seasonal variations in growth—rapid in summer and slower in winter—were also observable in the rings.

An exhibit emphasized that the great enemy of the forest is fire, which destroys ground cover, kills young seedlings, and damages growing timber. Fire protection is important, too, because the forest is the home of wildlife.

All conservation practices increase wildlife on our farms—the Scouts were quick to declare—because they provide food and shelter for birds and animals. Birds, in turn, help the farmers by destroying insects and weed seeds. Plants such as bicolor lespedeza, planted around field borders and in odd corners, are especially valuable in providing food and shelter for birds, the Scouts explained.

Visitors also learned that farm ponds, another conservation measure, produce fish and provide resting and feeding areas for ducks.

**OUTDOOR CLASSROOM.**—More than 200 high school boys participated in 3 field meetings held on farms in Jackson County, Iowa, last spring. The events were sponsored by the Jackson County School Masters Association, in cooperation with the Jackson Soil Conservation District, Soil Conservation Service technicians, and Carl Warren, local wildlife conservation officer. The purpose of the field trips was to acquaint the pupils with practical conservation farming programs and their benefits, and also to find out what problems must be met in successfully adapting soil conservation methods to the land.

Nine public and parochial high schools were represented: Andrew, Bellevue, and St. Joseph's of Bellevue, totaling 45 pupils, attended the first meeting of the series at the Bennett Schwager farm northwest of Springbrook. The second group of 80 boys from the Miles, Preston, and Sabula high schools visited the Louis Lane farm north of Preston, while the third group of 85 boys from the Baldwin, Maquoketa, and Monmouth high schools visited the Ralph Owen farm west of the Maquoketa Caves State Park.

Observations made at the different farms included contouring, strip cropping, terracing, grass waterway development, channel improvement, tiling, improvement of permanent pastureland, erosion control dams, and wildlife cover areas.

Each cooperating farmer was present to greet the boys and tell them about his conservation farming program. All of them have been following the contour method for several years and say that they wouldn't think of going back to up-and-downhill farming on their sloping fields. In addition to reducing their soil losses, these farmers have increased their yields to a high level through use of the right combination of soil improvement and conservation measures.

Floyd Parks, SCS farm planner, was in charge of the field meetings. He was assisted by Earl Kerker, SCS soil surveyor, and Warren.

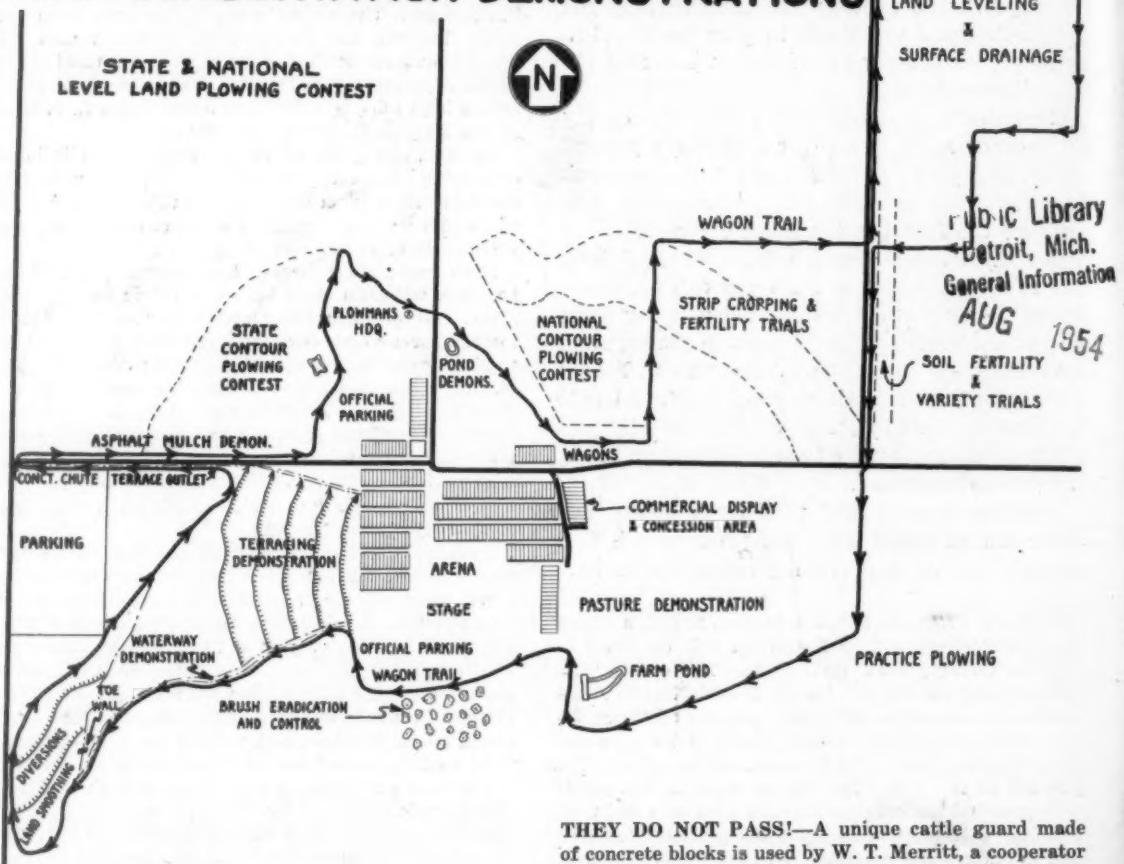
Besides observing the practices noted, the boys were shown how to lay out a field for contour farming and given some pointers regarding the successful use of this practice. Kerker told what he looks for when making the soil survey of a farm, and explained the land capability map used as a guide when developing a conservation farming plan. Warren discussed the manner in which wildlife conservation fits into a soil conservation program, and pointed out that our beneficial wildlife needs food, cover, and water for survival.

Sponsors and farmers alike were well pleased with the attitude displayed by the boys on these trips and feel that whether they become farmers or not, they henceforth will have a better appreciation of the land and its care.



A stop at the farm of Ralph Owen.

# MAP OF NATIONAL PLOW MATCHES AND CONSERVATION DEMONSTRATIONS



**BIG TIME EVENT.**—More than 100,000 people are expected to witness the 1954 National Plowing Matches and Conservation Demonstrations near Olney in Richland County, Ill., September 16, 17 and 18. This map showing the general site layout gives some idea of the scope of the 3-day event. It was prepared by the Caterpillar Tractor Co., which is one of the many farm machinery and implement firms cooperating in the event.

Thursday, September 16, has been officially declared Youth Day with all students from schools throughout Illinois being invited to attend as special guests. Friday the State Plow Matches get underway, and Saturday champion farmers from the midwestern states compete for the title of National Plowing Champion.

Soil conservation demonstrations will be conducted on each of the 3 days to show the latest developments in land smoothing, terracing, surface drainage, farm pond construction and other practices.

**THEY DO NOT PASS!**—A unique cattle guard made of concrete blocks is used by W. T. Merritt, a cooperator with the Edisto (S. C.) Soil Conservation District. He sets the blocks on end at the road level. Automobiles and other motor equipment pass over without difficulty, but Merritt says cattle and other animals cannot be driven across this type of guard. This makes it possible for him to use his various pastures and fields for grazing as provided for in his district farm plan without the inconvenience of gates obstructing the field roads.

**METAL FIELD NUMBERS.**—C. J. Ray, one of the supervisors of the Edisto (S. C.) Soil Conservation District, uses numbers cut from old automobile license plates to designate the fields on his farm as numbered in his farm plan. The section of a plate bearing the appropriate number is tacked to a fence post where it serves as a permanent marker and in addition to serving as a guide to his conservation operations, makes it possible for Ray to send workers to the proper field without danger of their getting mixed up or misunderstanding their instructions.